1. **Project Description:**

This is a proposal for $1 million over 3 years. TU and its program partners intend to secure an additional $600,000 or more in matching funds.

Through a series of six steps, described in detail below, TU and its partners shall develop a California Streamflow Stewardship Program (CSSP) for key coastal watersheds. The CSSP will be integral to carrying out State and federal recovery plans for anadromous salmonids.

Specifically, we will work with water users and natural resource management agencies in selected streams to establish water management solutions to enhance instream flows and protect beneficial uses. To do this, the CSSP will use existing scientific information and targeted new measurements to establish stream flow objectives for individual streams and to prepare management plans to accomplish those objectives. Program participants will cooperatively develop the program, thereby increasing the credibility and legitimacy of the results.

2. **Background and problem statement:**

The current system for administering water rights and protecting instream beneficial uses has largely failed to protect either the interests of water users or the flows necessary to support aquatic life. For example, there are now roughly 500 pending applications for new water rights in California, including 300 located along the north central coast. Most of these applications have been pending for many years, and most are currently being operated without a water right—and without ecological safeguards in place. The system fails new applicants (because they have been unable to get a water right), senior water right holders (because unauthorized diversions continue to operate without regard for the interests of prior appropriators), and public trust resources (because inadequate safeguards are in place to protect the instream flows necessary for fish and wildlife).

Traditionally, water diverters have been regulated individually, with little flexibility or opportunity to share costs or coordinate diversions, and little hope of adequately addressing the cumulative effects of numerous projects. Given the opportunity, water users could, if so coordinated, develop physical solutions to stream flow problems, and take joint actions to improve habitat at the most critical locations in the watershed. For example, water users could coordinate diversion schedules to maintain needed flows at particular points on a stream. Doing so would provide greater efficiency of water use while providing increased protection for

aquatic species dependent upon instream flows. Such coordination can also lead to improved ecological health of coastal lagoons and estuaries by encouraging upstream users to consider freshwater inflows to estuarine ecosystems in diversion schedules.

The CSSP will create the opportunity for such coordinated action. As described below, the program will combine a coherent data collection effort, rigorous analysis, outreach, and the collaboration of affected parties in order to achieve the goal of identifying and establishing necessary and feasible instream flows for key coastal watersheds.

3. **Project goals and objectives:** *Describe each of your goals and objectives, and your anticipated outcomes.*

I. Identify Coastal Watersheds to be Included in Study.

a. Identify streams within five to eight watersheds to comprise the study area.
b. Select streams where restoration of salmonids appears promising and feasible.
c. Select streams that are already impaired or threatened by diminishing flows, and where stream flows are a limiting factor to full recovery of salmonid population levels.
d. Select study streams that are geographically diverse and present an array of water management challenges and opportunities so as to create flexible models with wide applicability.
e. Select streams with water users eager to participate in the project. (Note that Task V, Engage Participants, begins concurrently with Task I.)

The final outcome of this task is a working list of five or more coastal watersheds that will form the study area for the project and meet the objectives stated above.

II. Gather Background Information.

a. Collect existing information concerning salmonid resources, fish passage barriers, streamflow, diversion activities, diversion permit conditions, water right protests, and similar issues.
b. Build upon the work already completed through the Passage Assessment Database (PAD), with a particular focus on instream flows.
c. Collect information that is germane to and will be used for the analyses conducted for Tasks III and IV.

The final outcome of this task is the collection of the basic existing information needed to characterize water supply and instream flows in each selected streams.

III. Characterize Watersheds.

a. Use data collected in Task II as the starting point.
b. Identify important data that are unavailable and must be collected in order to conduct flow analyses (see Task IV).
c. Characterize the subject streams in terms of habitat resources, streamflows, water supply infrastructure, and related concerns such as groundwater/surface water relationships and water diversions.

The final outcome of this task will be a detailed inventory of information pertaining to aquatic habitat and instream flow for each selected study stream.

IV. Analyze Data and Develop Stream Flow Recommendations.

a. Use stream characterizations to create hydrologic models for the study area.
b. Discuss with interested parties the scientific principles and technical assumptions that will form the basis of the modeling effort so as to clarify the methods of the analysis to increase both the credibility and legitimacy of the stream flow recommendations.
c. Establish instream flow recommendations reflecting stream location, magnitude, timing, and water sources necessary for a given degree of habitat protection.

The final outcome for this task will be instream flow recommendations for each study stream that can form the basis for stream management plans developed in subsequent tasks.

V. Engage Participants to Develop Legal and Institutional Framework.

a. Develop landowner guidance manual and other outreach materials.
b. Develop legal and institutional framework for management, structure, and substance of CSSP with participation of water diverters, regulatory agencies and other interested parties.
c. Identify or create legal entities capable of administering the individual stream management plans developed in Task IV.

d. Develop management systems to carry out stream management plans consistent with and in furtherance of State and federal recovery plans and other existing legal requirements (Water Code, endangered species, etc.).

The final outcome of this task will be the creation of a legal and institutional management system for implementing the CSSP.

VI. Establish Individual Stream Management Plans to Achieve Stream Flow Recommendations.

a. Prepare a water use and demand analysis, and an opportunities analysis to identify means for improved water management.
b. Identify specific, quantifiable management goals and objectives designed to achieve the stream flow recommendations developed in Task IV.
c. Identify specific management actions.
d. Take advantage of cost sharing and coordination opportunities among the water diverters on a particular stream.
e. Develop a program for monitoring, evaluation, and quality assurance.

The final outcome of this task will be individual stream management plans for each study stream to meet the stream flow recommendations developed in Task IV.

VII. Produce Final Report.

a. Summarize the program, its successes, and its shortcomings.
b. Circulate report widely and archive it with the Water Resources Archives at the University of California at Berkeley.

The outcome of the last task will be a final report a final report prepared by December 31, 2010.

4. **Plan of work:**

Our plan for completing each project task is described below.

I. Identify Coastal Watersheds to be Included in Study.

Due to the complexity of this effort, it is neither feasible nor appropriate to study every coastal watershed in the state. We propose to start with a pilot project that will inform and enable broader efforts. Using existing assessments such as the State Coho Recovery Strategy, the Southern

Steelhead Resources Project, draft NMFS recovery planning materials, Department of Fish and Game funded watershed plans, and other sources, we will identify streams within six to ten watersheds that comprise the study area.

In making these selections, TU and CEMAR will use several criteria. First, we will select from watersheds where restoration of salmonids appears promising and feasible. Second, we will select streams believed to be impaired or threatened with impairment by diminishing flows, and where stream flows are believed a limiting factor to full recovery of population levels. Third, study watersheds will reflect a diverse array of situations with respect to water supply and the allocation and ownership of water rights so that our sample can inform future efforts and be transferable across a broad range. Finally, the selected streams will be located only in places where there are landowners in the watershed who wish to cooperate in the effort.

We propose to start with a list of streams that meet the first three criteria and then, based on initial outreach to local landowners (see Task V, below), select from that list a final set of those streams where there are landowners eager to participate in the program.

II. Gather Background Information.

In the second task, we will gather basic information needed to characterize water supply and instream flows in the selected streams. CEMAR will lead the effort on this task, with assistance from TU.

It is anticipated that this effort will build upon the work already completed through the Passage Assessment Database (PAD), with a particular focus on instream flows. We will also devote the necessary resources toward refinement of the PAD, via a sub-contract, to support the project. Additional information sources include USGS databases, local landowners, various water supply and flows studies, DFG and other resource agency monitoring and survey results or watershed plans, water supplier records, and other watershed plans and assessments. Information concerning salmonid resources, fish passage barriers, streamflow, diversion activities, diversion permit conditions, water right protests, and similar issues will be germane to the analysis. Diversion related information in the PAD (most of which is publicly available through www.calfish.org) may be updated in some cases as part of the project. A key criterion for the information gathered in Task II is that it will be used for the analysis to be conducted in subsequent tasks.

III. Characterize Watersheds.

In Task III, we will characterize the subject streams in terms of habitat resources, streamflows, water supply infrastructure, and related concerns such as groundwater/surface water relationships and water diversions. Mutually accepted watershed characterizations are essential to the project as they will provide the assumptions for the analysis proposed in subsequent tasks below. CEMAR will lead the effort on this task, with participation from TU.

These watershed characterizations will include identification of important data that are unavailable and must be collected in order to conduct flow analyses in Task IV. We will reach out to local landowners and other key stakeholders to contribute information, review the characterizations, and comment on their accuracy. Such participants will include regulatory agency personnel (DFG, NMFS, SWRCB Division of Water Rights), water agencies, water user groups and individual users, and watershed restoration advocates. Any data that is collected will be available to participating stakeholders and public agencies.

In addition, this task will determine the sequence in which study streams are addressed in subsequent tasks. We will begin instream flow analysis on the stream or streams with the best developed information basis(es) first to test the adequacy of the flows analysis. Based upon the outcome of the first set of flow analyses, the method may be refined to improve the quality of the remaining flows determinations.

IV. Analyze Data and Develop Stream Flow Recommendations.

In this task, the stream characterizations will be used to create hydrologic models for the study area and develop specific stream flow recommendations. CEMAR will lead the effort on this task.

We will begin Task IV with a detailed work plan for the data to be analyzed in each study stream. At a minimum, the work plan will identify the cost and timeline for completing the analysis, any field work to be conducted, and describe how the new data will be combined with the information available from Task III to set parameters for the model and provide the expected output.

We will confer with interested parties regarding the scientific principles and technical assumptions that will form the basis of the modeling effort. Clarity and transparency for the methods of the analysis will enhance the credibility and legitimacy of the study recommendations.

Model results will provide instream flow recommendations that reflect location, magnitude, timing, and water sources necessary for a given degree of habitat protection. Local conditions will dictate whether recommendations are required for maintaining migratory, spawning, or rearing habitat, or a combination of these habitat types. It is envisioned that the model results will be reviewed by local and regional experts, and revisions made prior to development of the stream management plans. The stream flow recommendations and other information generated in this task will be used as the foundation for the individual stream management plans developed in task VI.

V. Engage Participants to Develop Legal and Institutional Framework.

With this task, we will work with water users, regulatory agencies, and other parties to develop the institutional and legal capacity necessary to implement the CSSP. We will also develop outreach and educational materials to promote local involvement in the program and raise public awareness of our efforts. This task will be led by TU with assistance from CEMAR and other contractors or consultants such as the Natural Heritage Institute. TU's Program Director will initiate the effort and rely heavily on a TU Staff Attorney to get the work done.

To achieve this goal, the outreach program will begin in parallel with the other tasks. We expect to bring in local water users as part of the effort to select pilot streams (see Task I), and continue their involvement through the collection of background information and watershed characterizations (Tasks II and III). As indicated above, we will encourage water users and others to develop jointly the parameters for the study design and criteria for developing stream flow recommendations in Task IV.

The CSSP will not supplant existing legal requirements; rather, the management systems we develop will ensure stream flow recommendations that are consistent with and in furtherance of State and federal recovery plans and other existing legal requirements. The management systems are likely to include identification or creation of entities to carry out the individual stream management plans created under Task VI for each watershed. Such an entity, which could be an existing public agency, or a corporation, nonprofit or association, could also collect and disseminate streamflow data, water use information, and other data, and coordinate diversion schedules or similar water management actions.

VI. Establish Individual Stream Management Plans to Achieve Stream Flow Recommendations.

In this task, we will work with local water users to develop stream management plans for each study stream to meet the stream flow recommendations developed in Task IV above. This task will be led by TU with assistance from CEMAR and additional consultants or contractors as needed. We expect the work to be carried out largely by a TU Staff Attorney with significant input from TU's Program Director.

Each stream management plan will take advantage of cost sharing and coordination opportunities among the water diverters on a particular stream. For example, interested parties could develop physical solutions to collectively manage diversion schedules so that needed streamflows are maintained at particular points in a stream. Other actions might include development of water tanks or small off-stream storage ponds to collect rainy season water as an alternative to diversions during dry periods, or pooling resources to address the most critical stream restoration activities in the watershed.[1]

We will begin by working with local water diverters to prepare a water use and demand analysis, and an opportunities analysis to identify means for improved management. We will then identify specific, quantifiable management goals and objectives. The management goals and objectives will be informed by the demand and opportunities analysis and designed to achieve the stream flow recommendations developed in Task IV. Next, we will identify specific management actions. Where appropriate, management actions will be based on testable hypotheses and implemented as experiments for adaptive management. Finally, we will develop a program for monitoring, evaluation, and quality assurance.

VII. Produce Final Report.

TU and CEMAR will prepare a final report summarize the program, its successes, and its shortcomings by December 31, 2010. We will circulate the report widely and archive it with the Water Resources Archives at the University of California at Berkeley.

5. **Project timeline:**

[1] In our discussions with the wine industry it has become apparent that many water users rely heavily on direct diversions during the summer and fall, under an old license or under a claim of riparian right. These diversions are both less reliable for water users and more harmful to aquatic resources than diversions to off-stream storage reservoirs filled during the rainy winter months. With the CSSP we will work with these landowners to secure the necessary permits and financing, protect their seniority, and enhance stream flows. Enhanced stream flows may be permanently protected under Water Code § 1707 or by other means. In the Mattole River, a similar effort encouraged domestic water users to install large water storage tanks, which are a viable alternative to off-stream ponds for smaller quantities of water.

We will proceed according to the following timeline:

01-08-03/08	Identify study area (Step I)
01/08-06/10	Outreach to stakeholders (Step V begins concurrently with Step I)
04/08-12/08	Gather background data (Step II)
07/08-09/09	Characterize watersheds (Step III)
09/08-06/10	Develop legal and institutional framework (Step V)
01/09-03/10	Analyze data and develop stream flow recommendations (Step IV)
06/09-06/10	Prepare and begin implementation of individual stream management plans (Step VI)
12/10	Release Final Report

6. **Project budget:** *Provide a complete project budget, and the amount and source of funds received and requests pending. Describe the source, amount and purpose of any matching funds you expect to receive.*

   The total anticipated project budget is approximately $1.6 million, of which $1 million is requested from the OPC and $600,000 or more will be accounted for by matching funds.

   The project budget is attached as Exhibit 1.

   Anticipated sources of matching funds are attached as Exhibit 2.

7. **Evaluation:**

   Success will be measured by the number of key coastal watersheds wherein the CSSP is adopted. A key watershed from each Coastal Conservancy region (Northcoast, Central Coast, and South Coast) will be considered a minimum level of success. Within each study watershed, success will be measured by whether the CSSP succeeds in developing instream flow recommendations and management plans to carry them out.

   The project proponents also anticipate that the success of the CSSP in any watershed will translate to other watersheds regionally as individuals and entities recognize that fact-based, scientifically defensible approaches to habitat protection and conservation do not necessitate conflicts with all water users everywhere.

8. **Organization/Personnel:**

Trout Unlimited (TU) is America's oldest and largest coldwater fisheries conservation organization. TU will function as lead grantee and oversee development of the CSSP. The organization is uniquely positioned to carry out this effort. TU championed A.B. 2121, signed by Gov. Schwarzenegger, which directs the SWRCB to adopt a policy for maintaining instream flows in coastal streams as it administers water rights. TU also filed a comprehensive Petition for Timely and Effective Regulation of New Water Diversions seeking wholesale reform of the water rights system at the SWRCB. To develop common-ground recommendations for the Petition and A.B. 2121, TU convened a wide-ranging stakeholder group including agricultural interests, urban water users, and state and federal agencies. TU has a long history of working jointly with vineyards and other landowners in the area on stream restoration projects, and the group is committed to finding cooperative solutions to these difficult problems. Indeed, a cornerstone of the organization's culture is a strong willingness to partner with landowners and private industry across the nation to produce on-the-ground results for salmon, steelhead, and trout.

Charlton H. Bonham is TU's California Director and he will maintain ultimate responsibility for overseeing the grant. As state director, Mr. Bonham is responsible for developing, implementing, and managing TU's programs in California. These include TU's California Water Project, Public Lands Project, and restoration and watershed projects in both northern and southern California. He also serves as the Chair of the California Hydropower Reform Coalition. He received his J.D. and Environmental and Natural Resources Law Certificate from the Northwestern School of Law of Lewis and Clark College, in Portland, Oregon.

Brian J. Johnson is the Program Director for TU's California Water Project, and he will be the lead staff person on the grant. With TU's California Water Project, Mr. Johnson works to promote scientifically sound stream flows for trout and salmon. He came to TU after five years at Shute, Mihaly & Weinberger, a public interest law firm where he represented community groups in battles to protect waterways and other natural resources. Before law school, he was the Communications Director at the White House environmental office from 1993-97. He co-created and managed EPA's first "Energy Star" initiative, for energy efficient computers, from 1991-93. Mr. Johnson graduated from Duke University and Stanford Law School.

For this project, TU is partnering with the **Center for Ecosystem Management and Restoration** (CEMAR), which will oversee the scientific evaluation of watersheds within the study area and development of stream

flow recommendations. CEMAR has been a statewide leader in the collaborative development of scientific information to support natural resource policy and planning. CEMAR's ground-breaking work on salmonids in the San Francisco Bay Area has generated renewed interest by regulatory agencies in the conservation and restoration of the region's remnant steelhead runs, and CEMAR has recently produced the most authoritative scientific account of historical distribution and current status of steelhead on the central and southern California coast. CEMAR has analyzed instream flows necessary for particular salmonids across a wide range of stream sizes, and maintains an extensive Geographic Information System of coastal California streams. Its understanding of the temporal and spatial variability of stream flows in coastal California will provide an essential foundation for the proposed project.

CEMAR's project team will include Andrew J. Gunther, Ph.D., the organization's Executive Director. Dr. Gunther received his Ph.D. from the University of California at Berkeley in 1987, and has worked at the intersection of environmental science and policy since 1979. He is facilitating the deliberations of a multi-stakeholder group working to restore steelhead to the Alameda Creek watershed, and is assisting the USEPA develop indicators of ecological condition for the San Francisco Estuary. Dr. Gunther previously served (1991-2001) as the Assistant Chief Scientist for the Exxon Valdez Oil Spill Restoration Program, where he helped coordinate development of the restoration science program. Dr. Gunther was also the original manager (1993-1997) of the Regional Monitoring Program for Toxic Contaminants in the San Francisco Estuary, and is a member of the Board of Directors of the Union of Concerned Scientists.

Gordon S. Becker, M.S., is a Senior Fisheries Scientist for CEMAR, and he will be the lead CEMAR staff person on the project. Mr. Becker has worked with natural resources management issues for 15 years. His recent projects focus on various aspects of steelhead trout restoration including natural history and barrier mitigation. He received his M.S. from the University of Wisconsin-Madison.

Matthew J. Deitch, Ph.D., has conducted research on watershed management issues in California and has provided hydrological expertise for CEMAR related to streamflow and water management in Central and South Coast drainages. His research has included investigating differences in streamflow and salmonid-specific flow thresholds from headwaters to downstream reaches in the Russian River watershed; and described institutional constraints and uncertainties limiting salmonid conservation in coastal California. He is currently working with

stakeholders to collect streamflow data and develop ecologically sustainable water management practices in Sonoma County, California.

9. **Benefits:** *Describe the benefits and beneficiaries you expect from your project.*

   A successful CSSP will result in the establishment of instream flow performance objectives in coastal watersheds and a cooperative stream management plan in each watershed to meet those objectives. This will protect and preserve the habitat value of coastal watersheds, as well as the many other beneficial uses of these rivers and streams, such as drinking water supply.

10. **Obstacles:**
    There are three key obstacles to this endeavor:
    1) Water use disputes are notoriously thorny, and system for administering water rights in coastal areas has been especially troublesome.
    2) The project requires novel and creative approaches to solving instream flow debates.
    3) The project will best succeed with the participation of individual diverters, conservationists, and resource management agencies, and consensus on instream flow needs can be challenging to achieve.

11. **Support:**

    State Water Resources Control Board

    California Department of Fish and Game

    National Marine Fisheries Service, Protected Species Division

    North Coast Regional Water Quality Control Board

    California State Coastal Conservancy

    Sonoma County Water Agency

    City of Ventura

    United Winegrowers

    Sonoma County Winegrape Commission

    Natural Heritage Institute

Ellison, Schneider & Harris

12. **Controversy:**
Any discussion of instream flows involves controversy. However, much of the controversy can be defused with the application of focused data collection using study designs developed with input from participants, rigorous and transparent, analysis of results, and discussion of the interpretation and application of findings among water users, conservationists, and resource agencies. By providing adequately for each of these phases, the proposed project will diminish rhetoric and emphasize informed, scientifically-based discussion regarding management of a precious and finite resource.

The lengthy list of partners is a strong indication that most concerned parties recognize the dire need for a concerted, organized, and funded approach to the issue of instream flows in coastal watersheds.